

§ 3280.405

24 CFR Ch. XX (4–1–13 Edition)

without taking the home out of conformance with the standards in this part. These instructions must be included in the printed instructions that accompany each manufactured home. The instructions shall also indicate whether receiving devices, sleeves, or anchors, for fasteners to be used to secure the shutters or protective covers to the exterior walls, have been installed or provided by the manufacturer.

[52 FR 4583, Feb. 12, 1987, as amended at 59 FR 2474, Jan. 14, 1994; 70 FR 72046, Nov. 30, 2005]

§ 3280.405 Standard for swinging exterior passage doors for use in manufactured homes.

(a) *Introduction.* This standard applies to all exterior passage door units, excluding sliding doors and doors used for access to utilities and compartments. This standard applies only to the door frame consisting of jambs, head and sill and the attached door or doors.

(b) *Performance requirements.* The design and construction of exterior door units must meet all requirements of AAMA 1702.2-95, Voluntary Standard Swinging Exterior Passage Door for Utilization in Manufactured Housing.

(c) *Materials and methods.* Any material or method of construction shall conform to the performance requirements as outlined in paragraph (b) of this section. Plywood shall be exterior type and preservative treated in accordance with NWWDA I.S.4-81, Water Repellent Preservative Non-Pressure Treatment for Millwork.

(d) *Exterior doors.* All swinging exterior doors shall be installed in a manner which allows proper operation and provides protection against the elements (see § 3280.307).

(e) *Certification.* All swinging exterior doors to be installed in manufactured homes must be certified as complying with AAMA 1702.2-95, Voluntary Standard Swinging Exterior Passage Door for Utilization in Manufactured Housing.

(1) All such doors must show evidence of certification by affixing a quality certification label to the product in accordance with ANSI Z34.1-1993, Third Party Certification Programs for Products, Processes, and Services.

(2) In determining certifiability of the products, an independent quality assurance agency must conduct a pre-production specimen test in accordance with AAMA 1702.2-95, Voluntary Standard Swinging Exterior Passage Door for Utilization in Manufactured Housing.

(f) *Protection of exterior doors in high wind areas.* For homes designed to be located in Wind Zones II and III, manufacturers shall design exterior walls surrounding the exterior door openings to allow for the installation of shutters or other protective covers, such as plywood, to cover these openings. Although not required, the Department encourages manufacturers to provide the shutters or protective covers and to install receiving devices, sleeves, or anchors for fasteners to be used to secure the shutters or protective covers to the exterior walls. If the manufacturer does not provide shutters or other protective covers to cover these openings, the manufacturer must provide to the homeowner instructions for at least one method of protecting exterior door openings. This method must be capable of resisting the design wind pressures specified in § 3280.305 without taking the home out of conformance with the standards in this part. These instructions must be included in the printed instructions that accompany each manufactured home. The instructions shall also indicate whether receiving devices, sleeves, or anchors, for fasteners to be used to secure the shutters or protective covers to the exterior walls, have been installed or provided by the manufacturer.

[40 FR 58752, Dec. 18, 1975. Redesignated at 44 FR 20679, Apr. 6, 1979, as amended at 52 FR 4583, Feb. 12, 1987; 52 FR 35543, Sept. 22, 1987; 58 FR 55009, Oct. 25, 1993; 59 FR 2474, Jan. 14, 1994; 70 FR 72046, Nov. 30, 2005]

§ 3280.406 Air chamber test method for certification and qualification of formaldehyde emission levels.

(a) *Preconditioning.* Preconditioning of plywood or particleboard panels for air chamber tests shall be initiated as soon as practicable but not in excess of 30 days after the plywood or particleboard is produced or surface-finished, whichever is later, using randomly selected panels.

(1) If preconditioning is to be initiated more than two days after the plywood or particleboard is produced or surface-finished, whichever is later, the panels must be dead-stacked or airtight wrapped until preconditioning is initiated.

(2) Panels selected for testing in the air chamber shall not be taken from the top or bottom of the stack.

(b) *Testing.* Testing must be conducted in accordance with the Standard Test Method for Determining Formaldehyde Levels from Wood Products Under Defined Test Conditions Using a Large Chamber, ASTM E 1333-96, with the following exceptions:

(1) The chamber shall be operated indoors.

(2) Plywood and particleboard panels shall be individually tested in accordance with the following loading ratios:

(i) Plywood—0.29 Ft²/Ft³, and

(ii) Particleboard—0.13 Ft²/Ft³.

(3) Temperature to be maintained inside the chamber shall be 77° plus or minus 2 °F.

(4) The test concentration (C) shall be standardized to a level (C₀) at a temperature (t₀) of 77 °F and 50% relative humidity (H₀) by the following formula:

$$C = C_0 \times [1 + A_x (H - H_0)] \times e^{-R(t/t_0 - 1/t_0)}$$

where:

C = Test formaldehyde concentration

C₀ = Standardized formaldehyde concentration

e = Natural log base

R = Coefficient of temperature (9799)

t = Actual test condition temperature (° K)

t₀ = Standardized temperature (° K)

A = Coefficient of humidity (0.0175)

H = Actual relative humidity (%)

H₀ = Standardized relative humidity (%)

The standardized level (C₀) is the concentration used to determine compliance with § 3280.308(a).

(5) The air chamber shall be inspected and recalibrated at least annually to insure its proper operation under test conditions.

[49 FR 32012, Aug. 9, 1984, as amended at 58 FR 55009, Oct. 25, 1993; 70 FR 72046, Nov. 30, 2005]

Subpart F—Thermal Protection

§ 3280.501 Scope.

This subpart sets forth the requirements for condensation control, air infiltration, thermal insulation and certification for heating and comfort cooling.

§ 3280.502 Definitions.

(a) The following definitions are applicable to subpart F only:

(1) *Pressure envelope* means that primary air barrier surrounding the living space which serves to limit air leakage. In construction using ventilated cavities, the pressure envelope is the interior skin.

(2) *Thermal envelope area* means the sum of the surface areas of outside walls, ceiling and floor, including all openings. The wall area is measured by multiplying outside wall lengths by the inside wall height from floor to ceiling. The floor and ceiling areas are considered as horizontal surfaces using exterior width and length.

§ 3280.503 Materials.

Materials used for insulation shall be of proven effectiveness and adequate durability to assure that required design conditions concerning thermal transmission are attained.

§ 3280.504 Condensation control and installation of vapor retarders.

(a) *Ceiling vapor retarders.* (1) In U_o Value Zones 2 and 3, ceilings must have a vapor retarder with a permeance of not greater than 1 perm (as measured by ASTM E 96-95 Standard Test Methods for Water Vapor Transmission of Materials) installed on the living space side of the roof cavity.

(2) For manufactured homes designed for U_o Value Zone 1, the vapor retarder may be omitted.

(b) *Exterior walls.* (1) Exterior walls must have a vapor retarder with a permeance no greater than 1 perm (dry cup method) installed on the living space side of the wall; or

(2) Unventilated wall cavities must have an external covering and/or sheathing that forms the pressure envelope. The covering and/or sheathing must have a combined permeance of not less than 5.0 perms. In the absence